



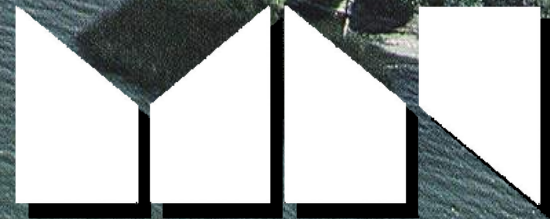
Flooded Islands Feasibility Study

Salinity Control Gate Concept Study Progress Report

Presented By:

Moffatt & Nichol

January 9, 2006



Presentation Focus

- Salinity Control
- Emergency Response

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- **Marine Structures Engineers**
- Experienced in:
 - Delta and San Francisco Bay Area (i.e. Franks Tract Restoration; Levee Seismic Risk)
 - Engineers with Real Offshore Experience (i.e. North Sea etc.; and Float-Over Construction Techniques)
 - Marine Foundations (i.e. New Bay Bridge Foundations; SFO Runway Development Program)

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Flooded Islands Project

Short Term "Pilot" Project

Gate Feature

Barrier Feature

Environmental

Speed

Deployment

Cost

Functionality

Reliability

Relocatability

Aesthetics

Long Term "Permanent" Project

Gate Feature

Barrier Feature

Environmental

Cost

Functionality

Reliability

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Aesthetics



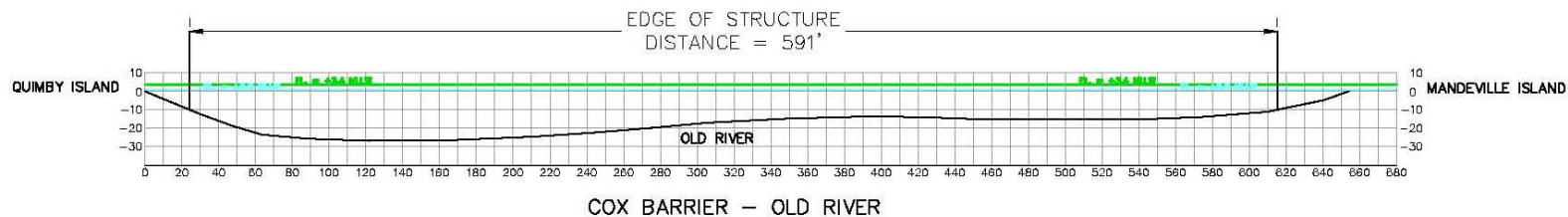
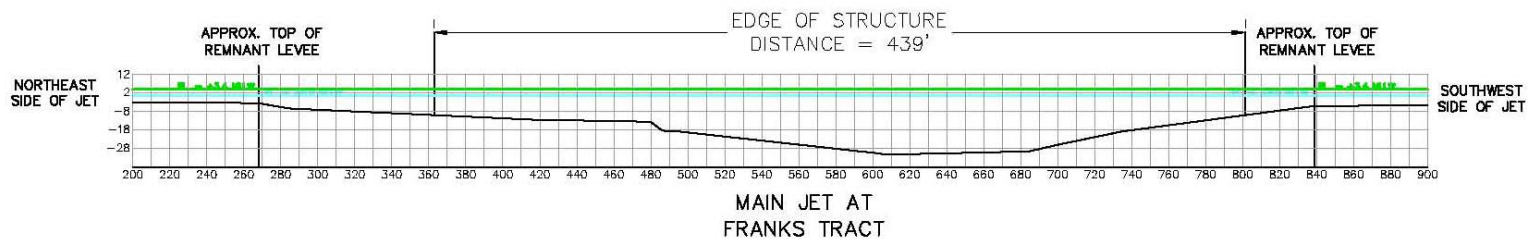
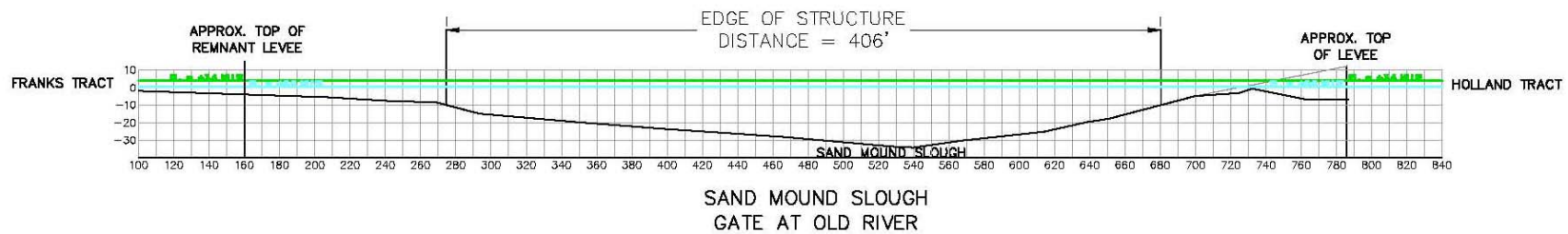
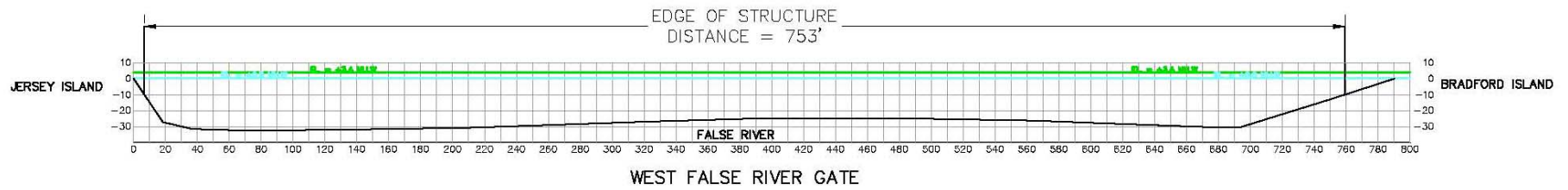
Potential Site Locations



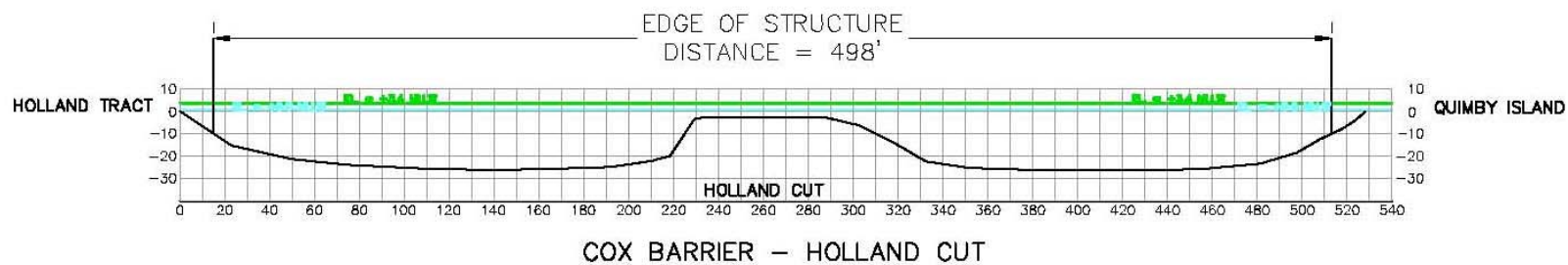
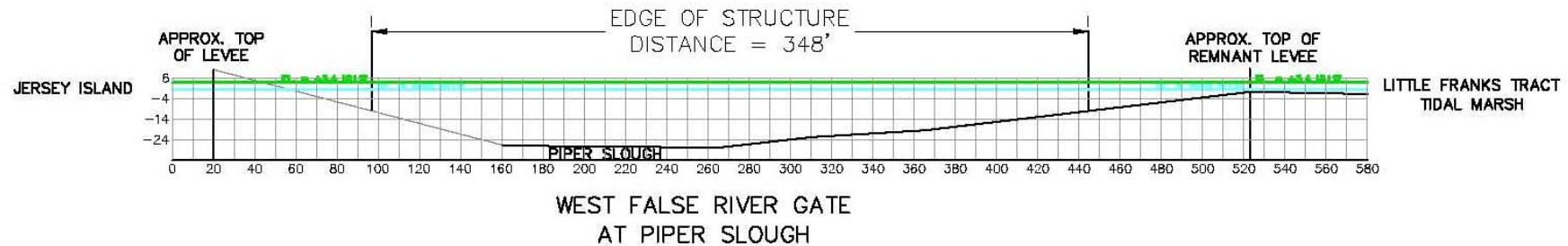
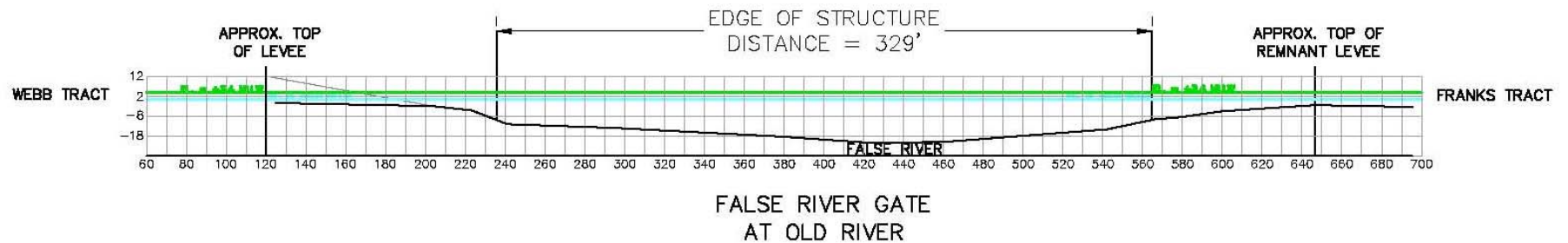
MOFFATT & NICHOL

Flooded Islands – Feasibility Study

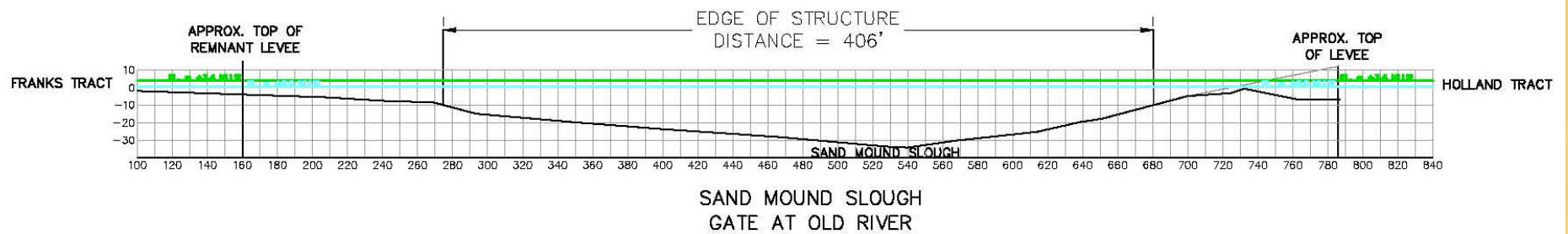
Site Conditions



Site Conditions



Typical Section



Deployment Methods

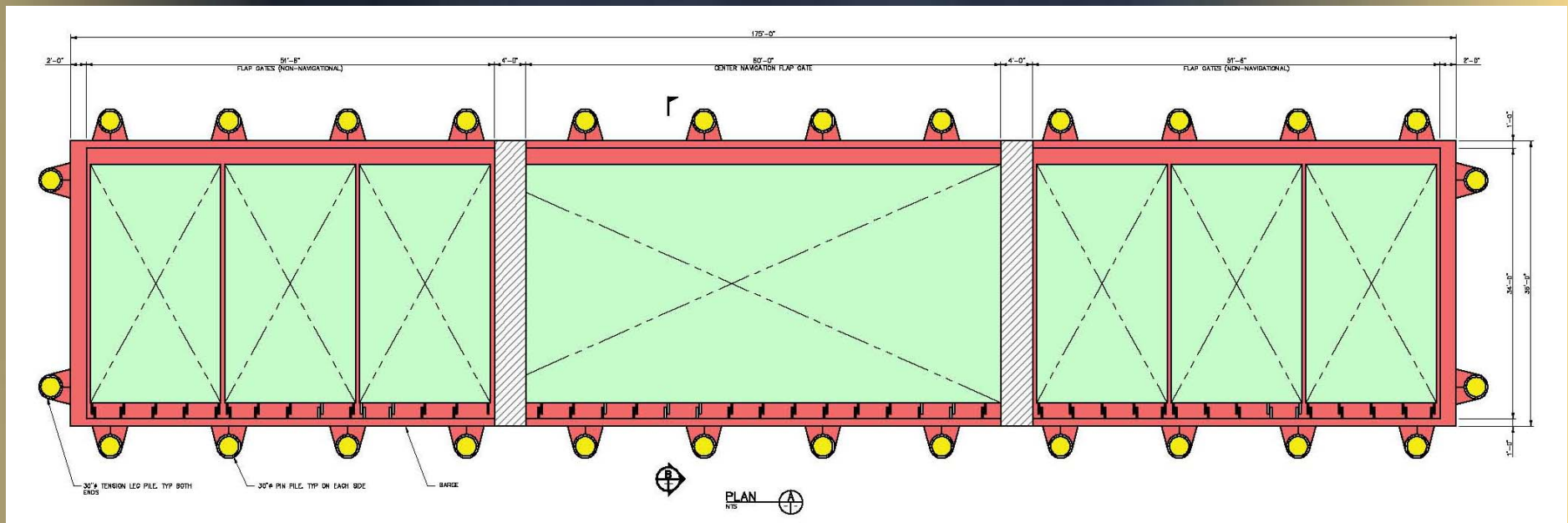
- Environmental Impact
- Speed of Installation
- Relocatability
- Buy vs. Rent

Deployment Methods

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- Relocatability
- Buy vs. Rent

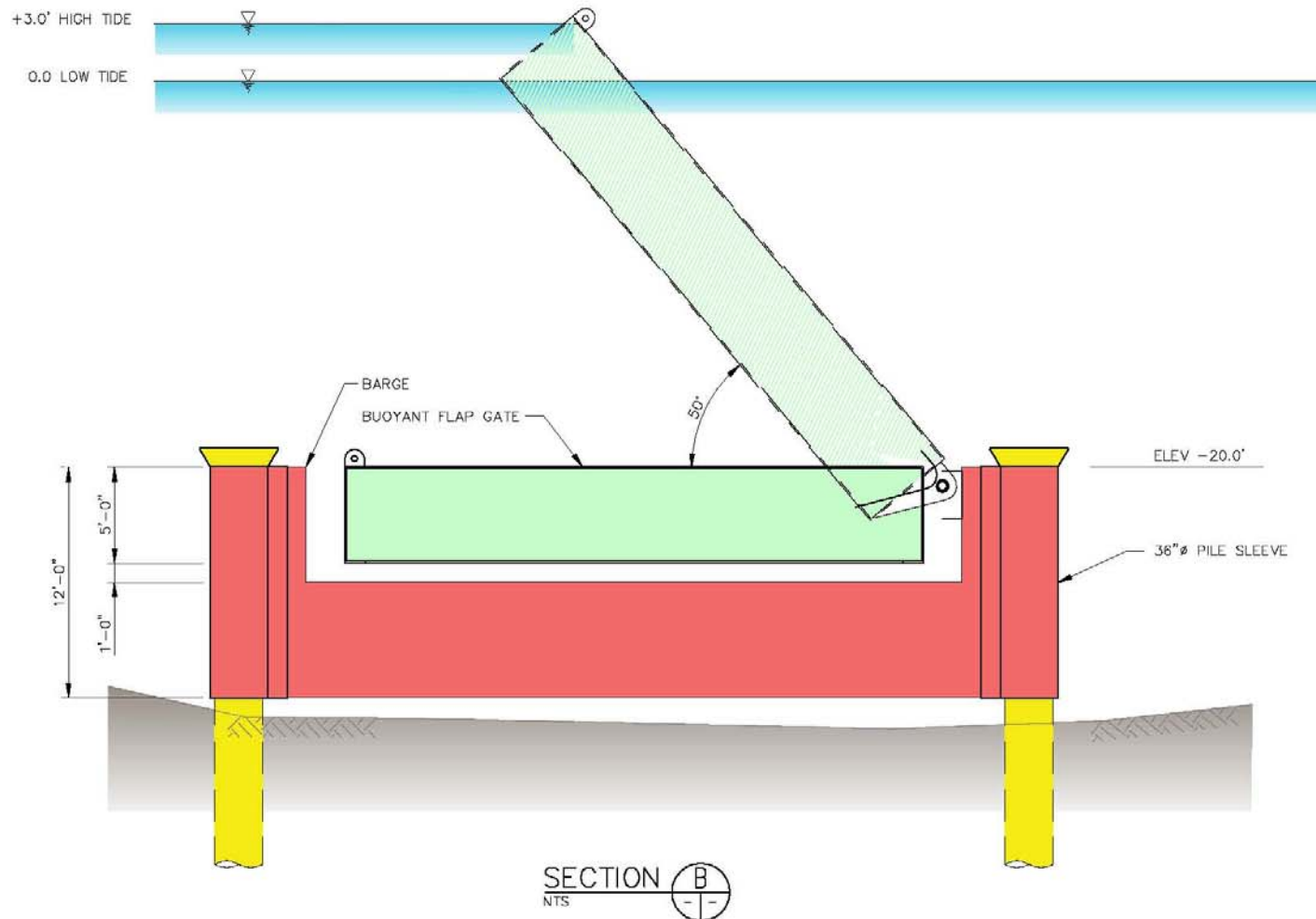
Deployment Methods

Tension Leg Platform

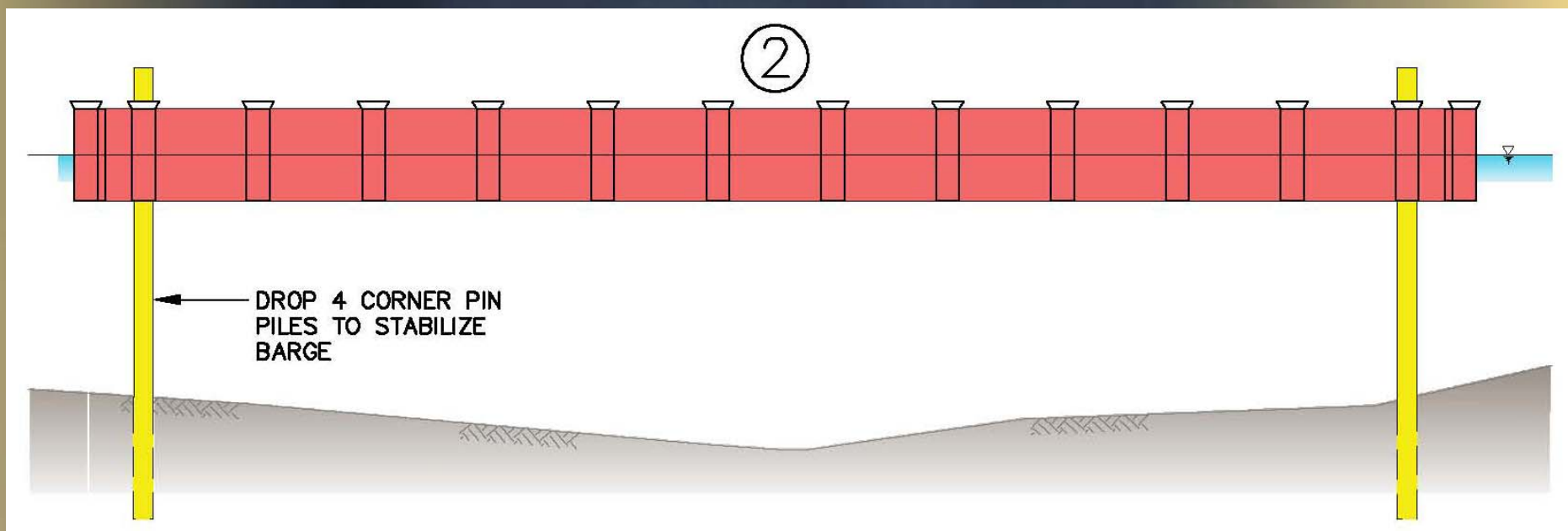
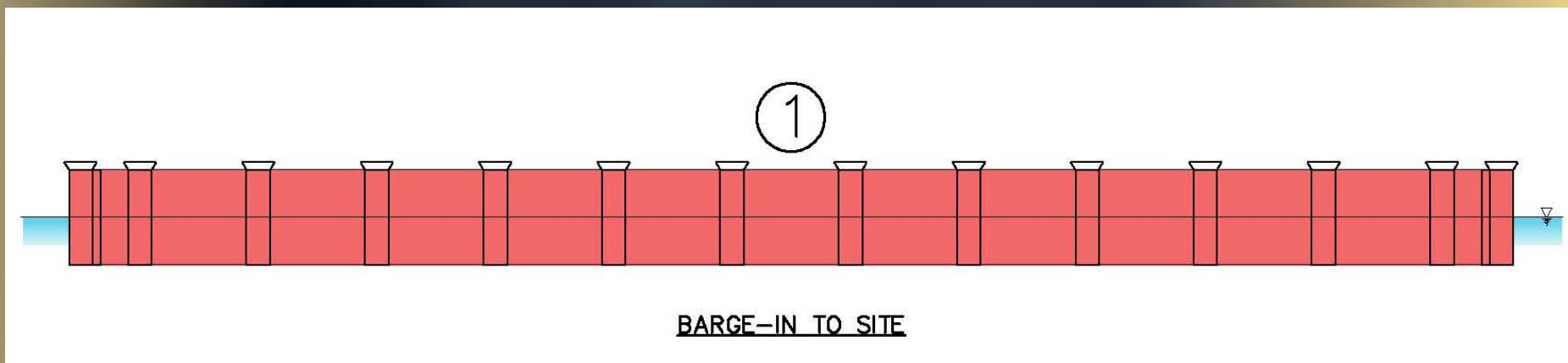


Deployment Methods

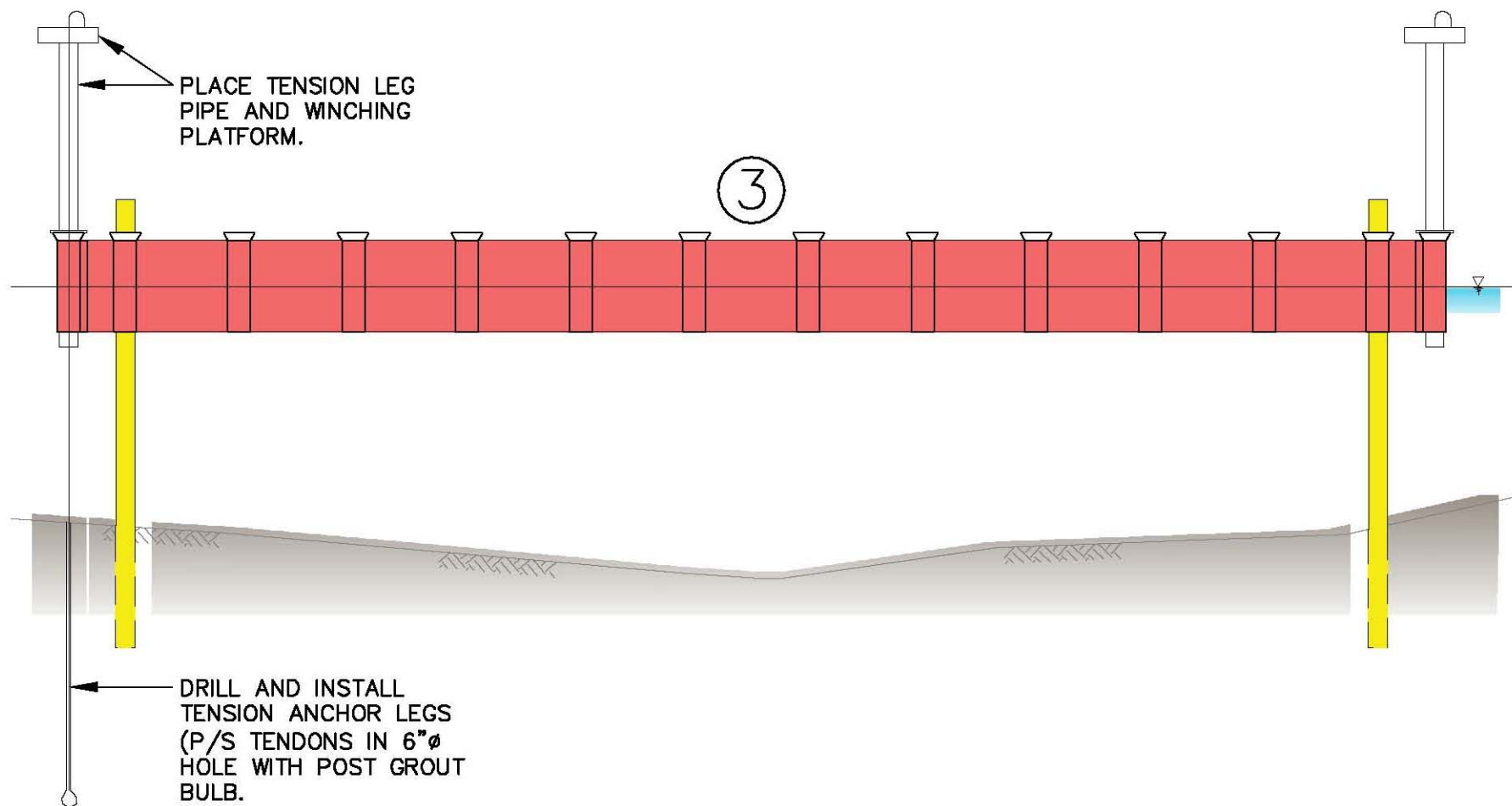
Tension Leg Platform



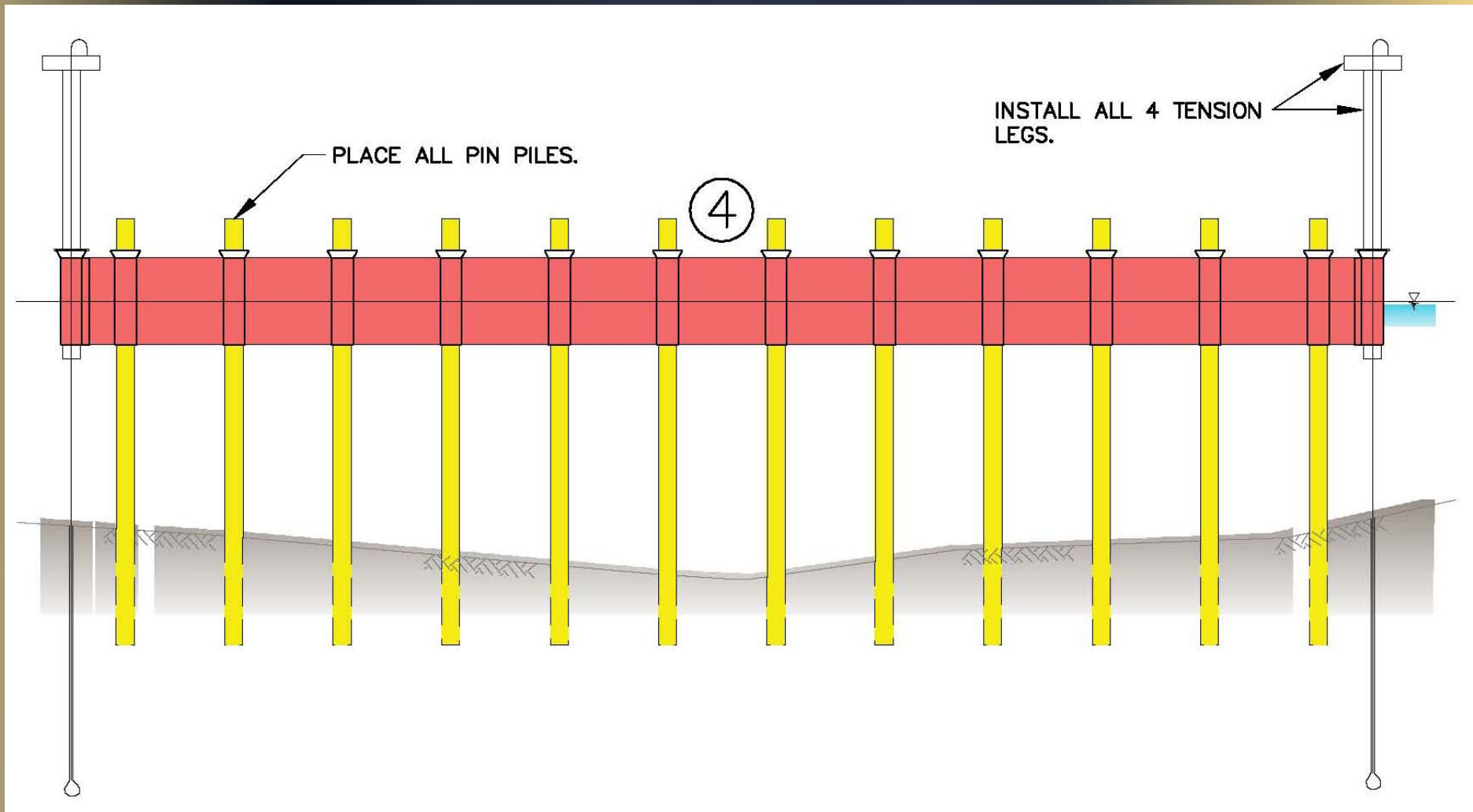
Deployment Methods



Deployment Methods



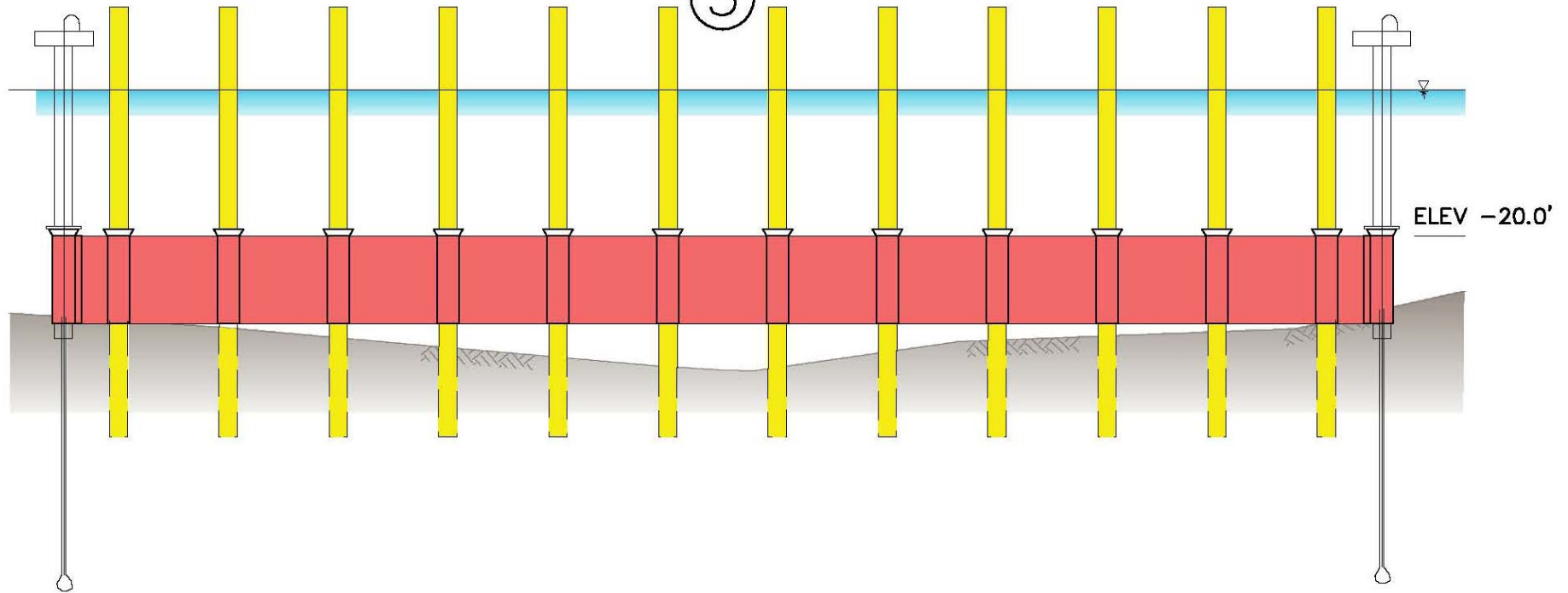
Deployment Methods



Deployment Methods

IMMERSE BARGE BY WINCHING AND BY
BALLAST CONTROL.

⑤

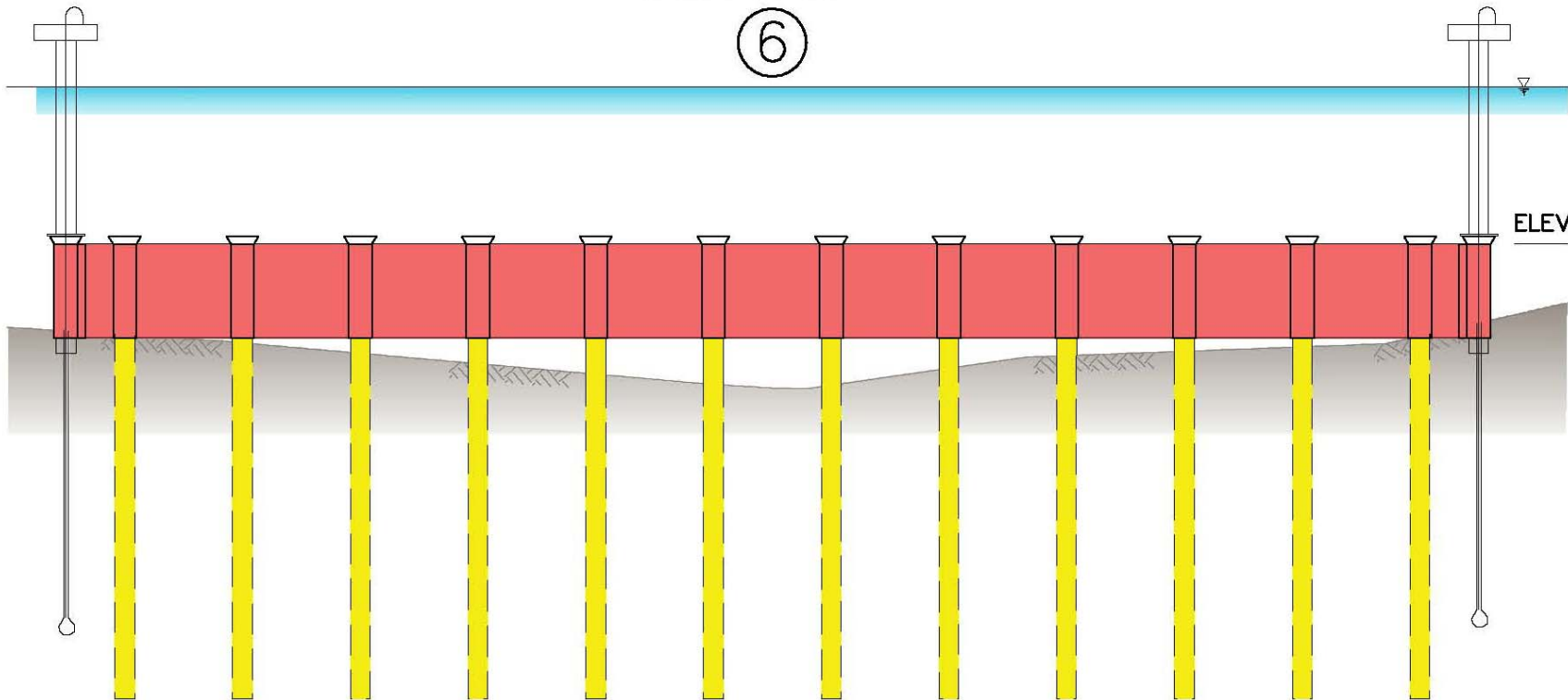


Deployment Methods

DRIVE ALL PIN PILES TO FULL
EMBEDMENT DEPTH.

⑥

ELEV -20.0'



Draft Engineering Criteria

- **Minimum Navigation Draft Clearance = 10' @ 0' MLLW**
- Maximum Differential Head = 3'
- Minimum Navigation Width Clearance = 60'
- Flow Constriction:
 - Closed - 90% of Flow Area
 - Open – 60% of Flow Area
- Tidal Characteristics:
 - MLLW = 0'
 - MHHW = +3.4'
 - LOWL = -2.0'

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Concept Introduction

- Gate / Barrier:
 - Sliding
 - Radial Segment
 - Butterfly
 - Flap
- Barrier Only:
 - Louvered System
 - Pendant
- Marginal Closure Area:
 - Sheetpile
 - Rock Fill

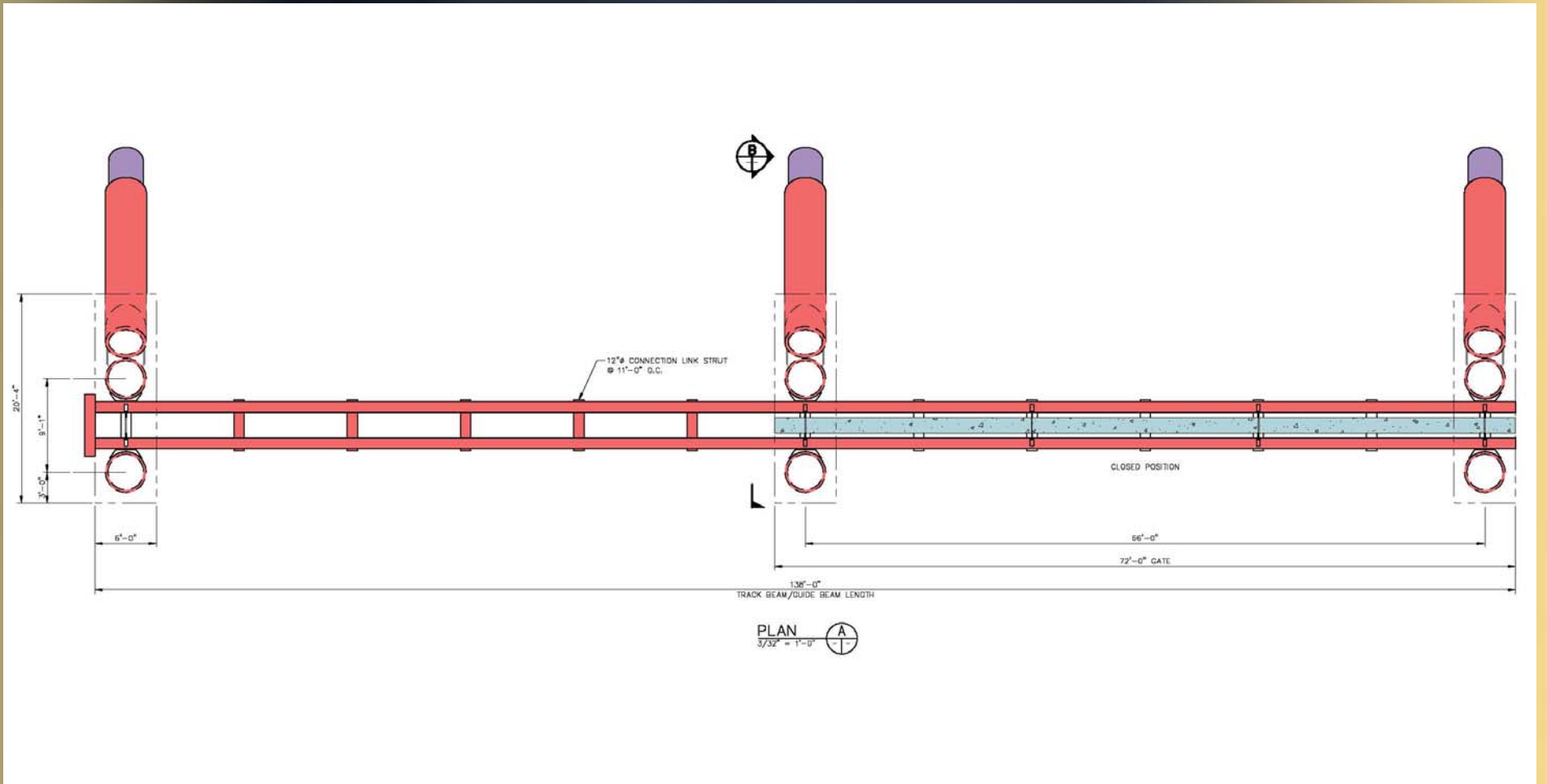
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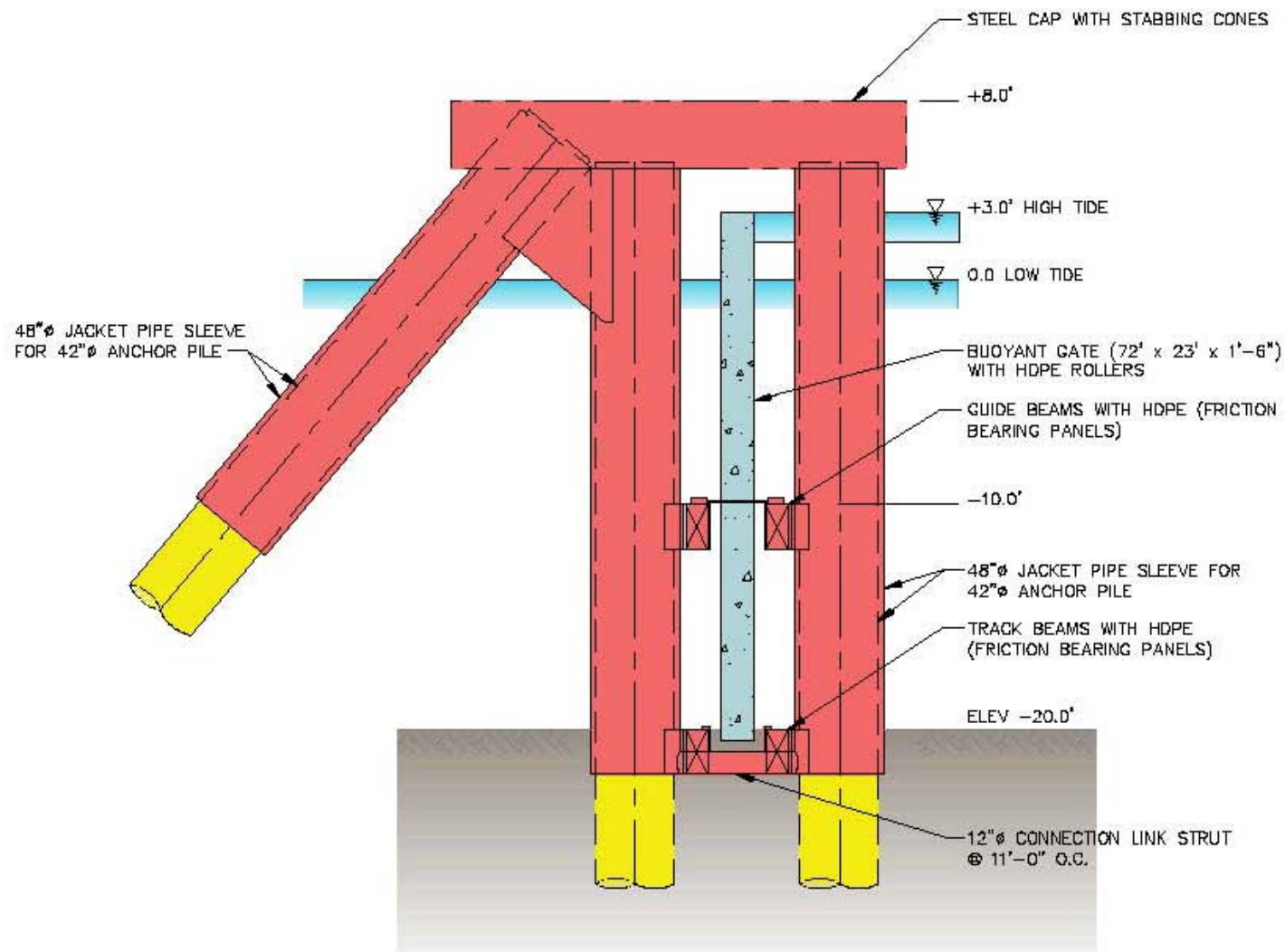
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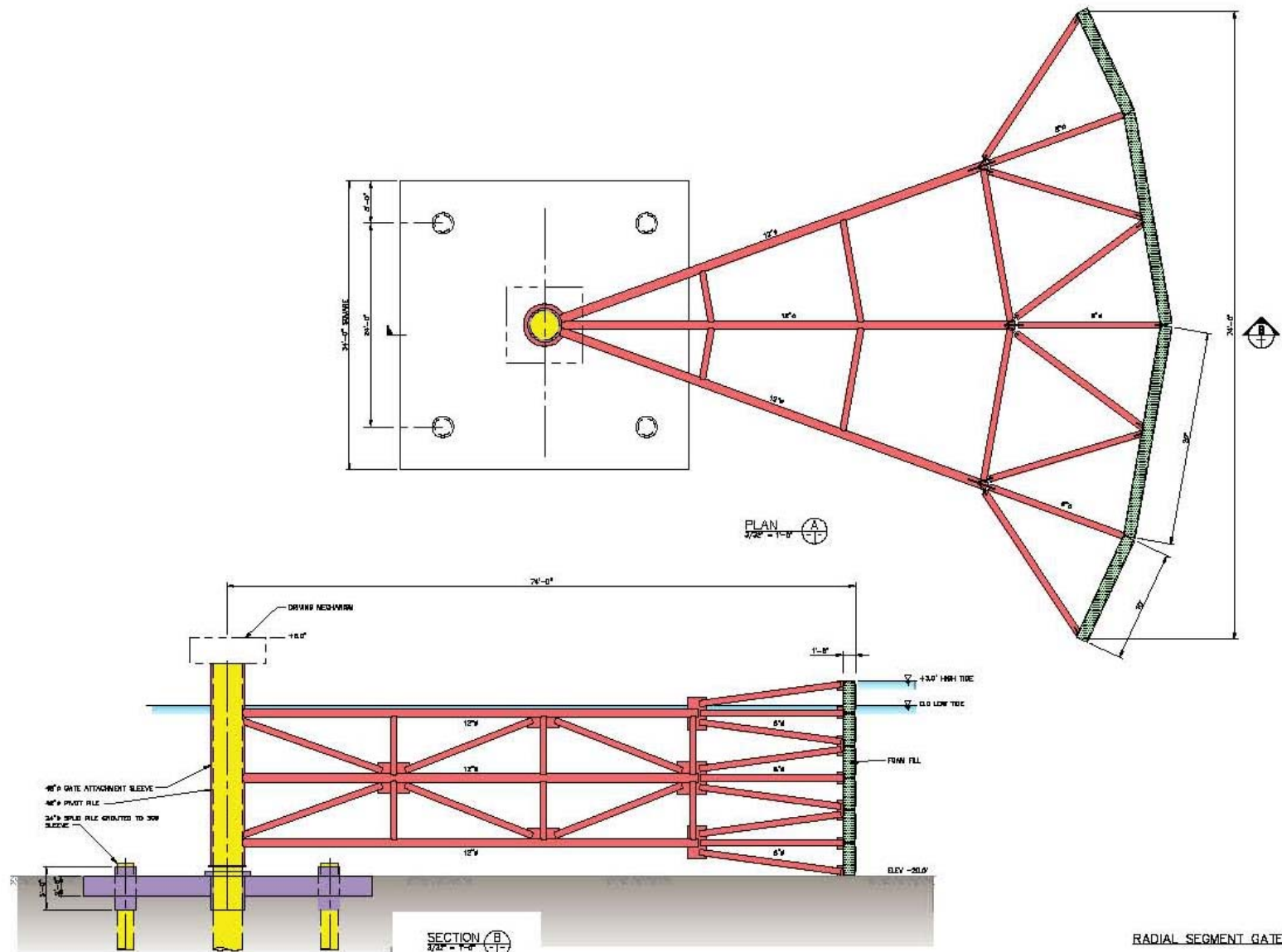


Gate / Barrier Concepts – Sliding

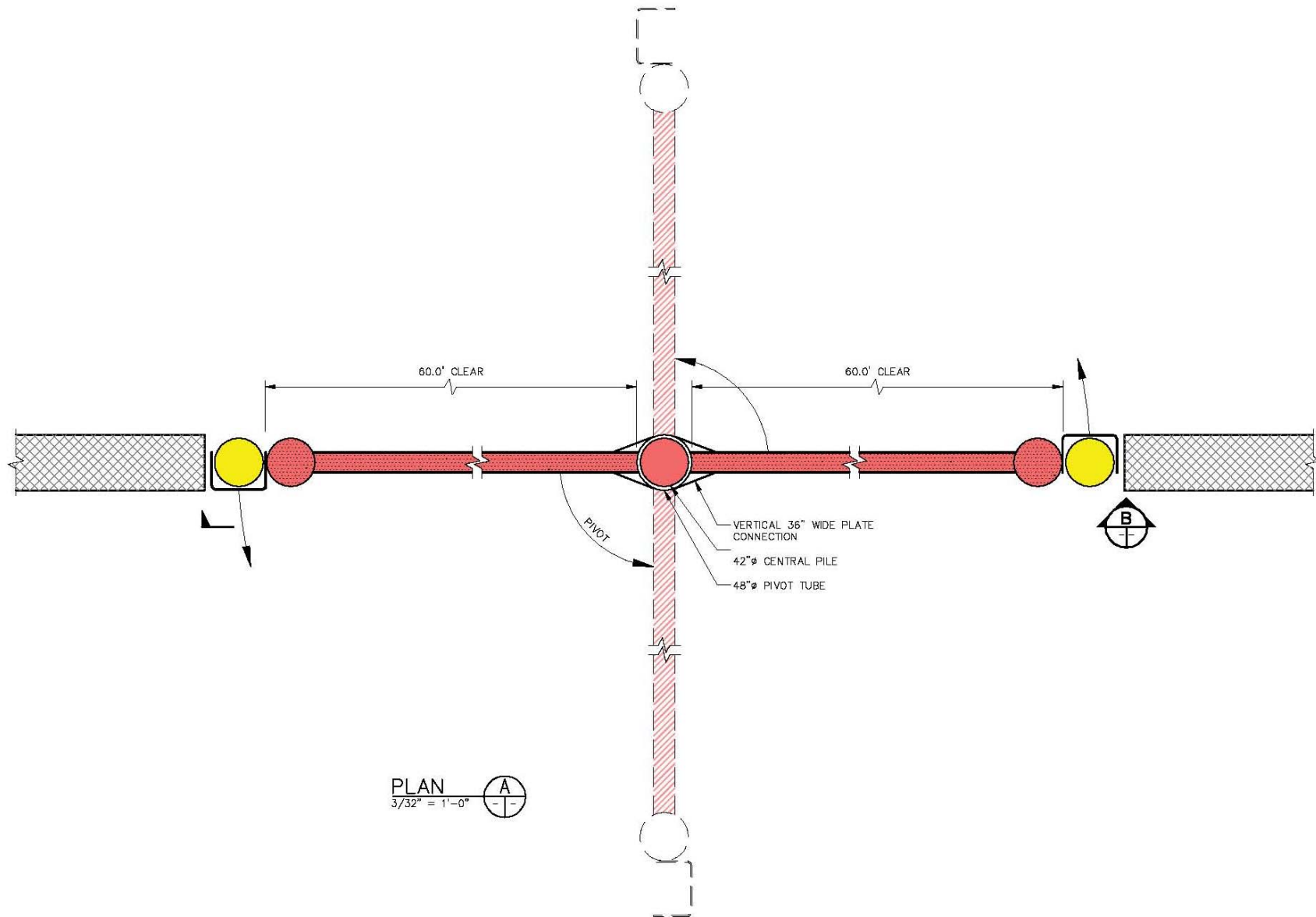


SECTION B
 $\frac{3}{32}'' = 1'-0''$

Gate / Barrier Concepts – Radial Segment



Gate / Barrier Concepts – Butterfly



Gate / Barrier Concepts – Butterfly

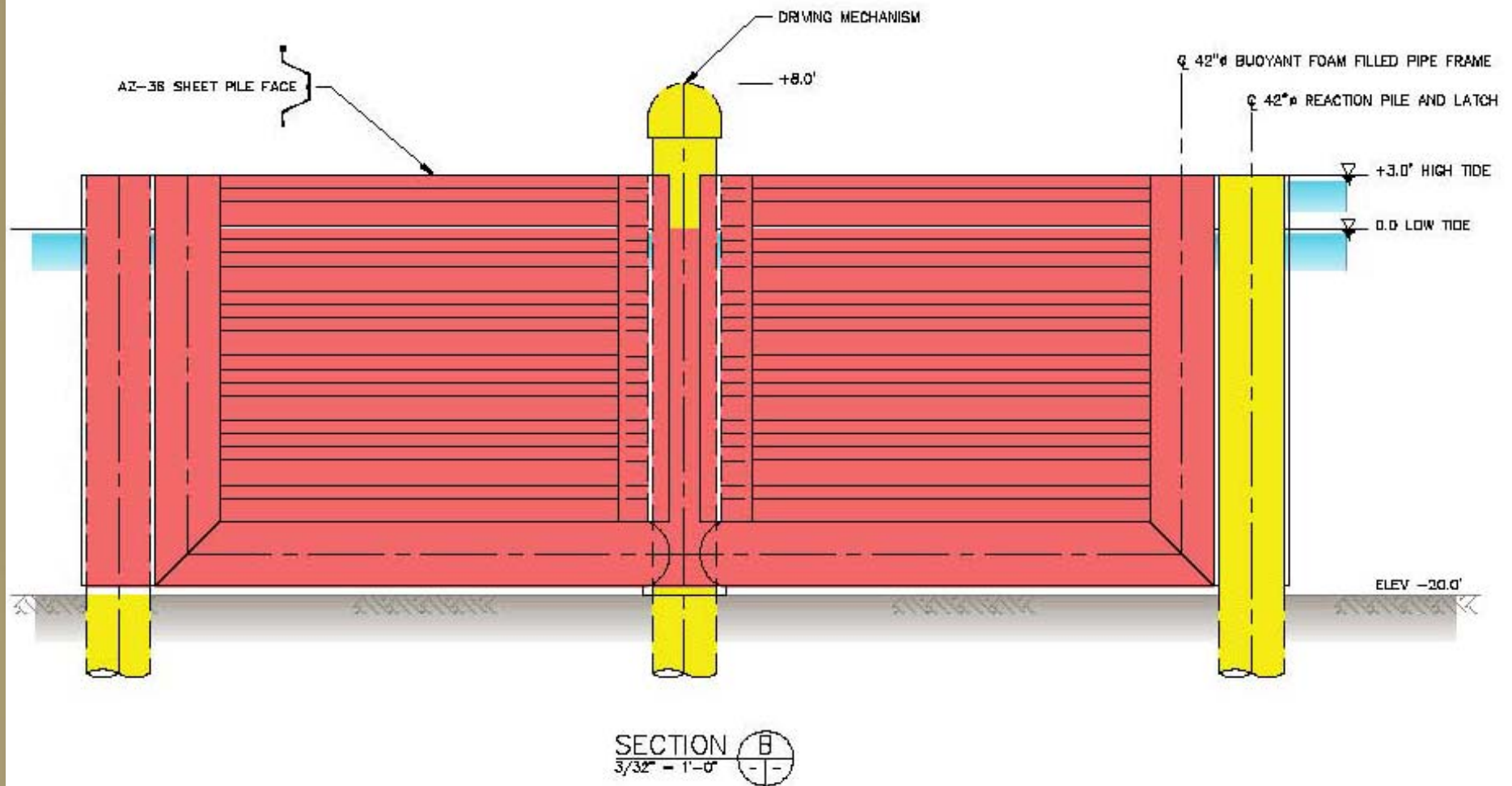


Diagram illustrating the cross-section (SECTION B) of a tidal gate structure, showing the arrangement of buoyancy tanks and structural components.

Key Components and Labels:

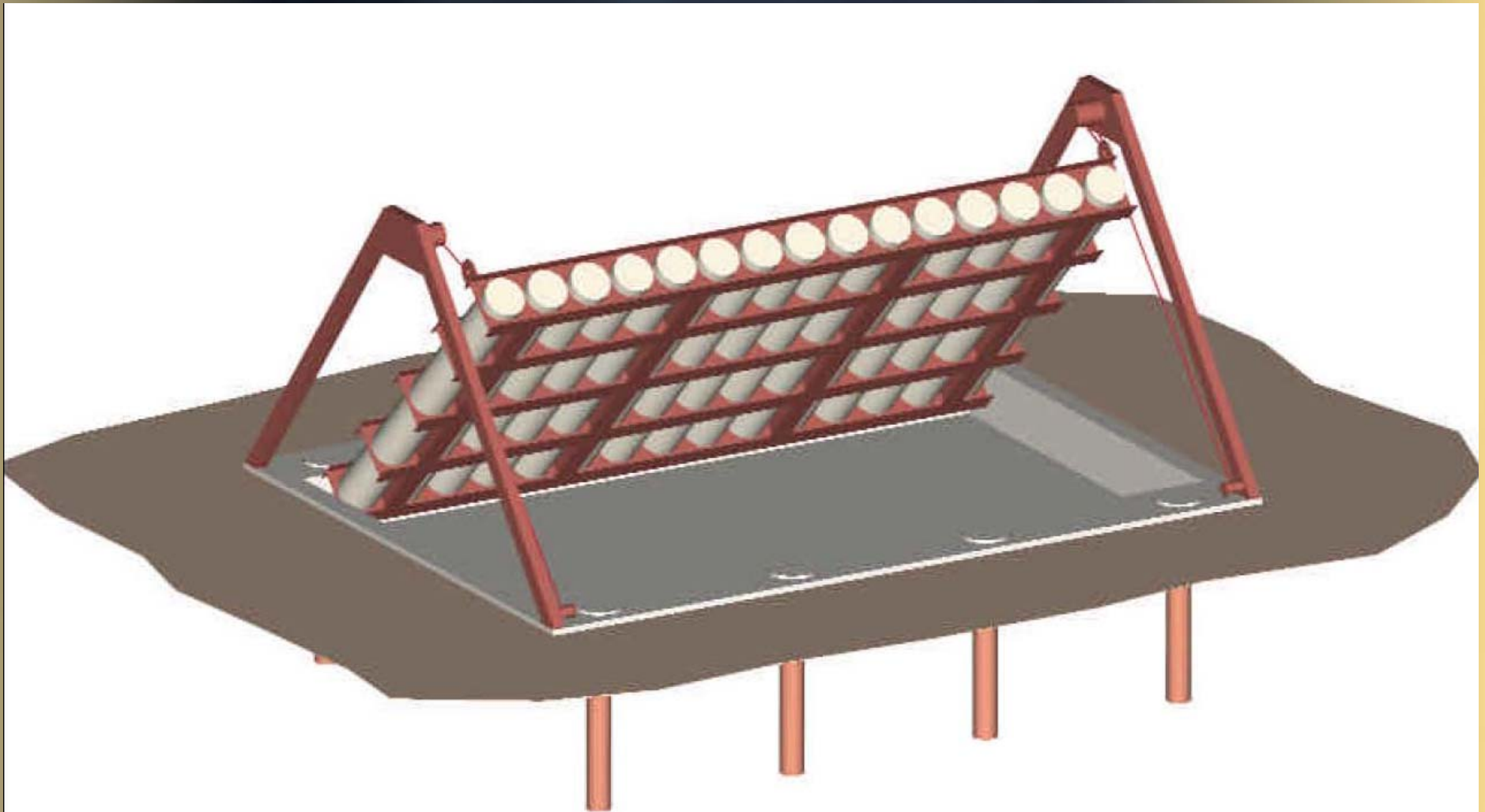
- WINCH FRAME:** The red A-frame structure supporting the gate.
- 42" ϕ x 34.0' LONG PVC CYLINDER BUOYANCY TANKS (15 TOTAL):** The green cylindrical tanks arranged in a grid.
- FABRICATED GIRDERS:** The horizontal structural members supporting the tanks.
- CONCRETE BASE:** The foundation for the structure.
- 24" ϕ SPUD PILES:** The vertical piles supporting the concrete base.
- ELEV -20.0':** The elevation of the concrete base.
- +3.0' HIGH TIDE:** The water level at high tide.
- 0.0 LOW TIDE:** The water level at low tide.

Dimensions:

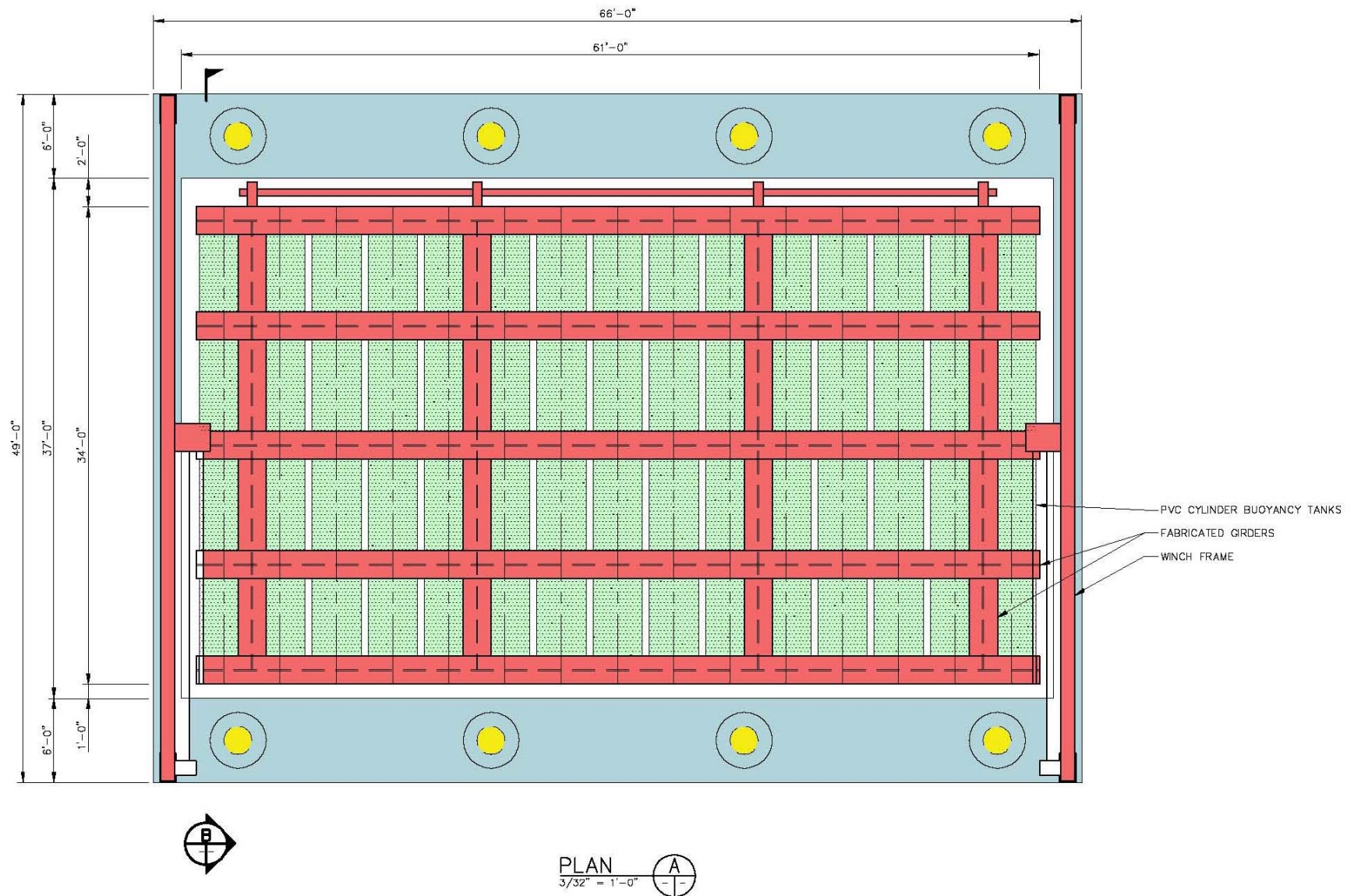
- Overall width: 6'-0"
- Overall height: 5'-0"
- Scale: $\frac{3}{32}" = 1'-0"$

SECTION B

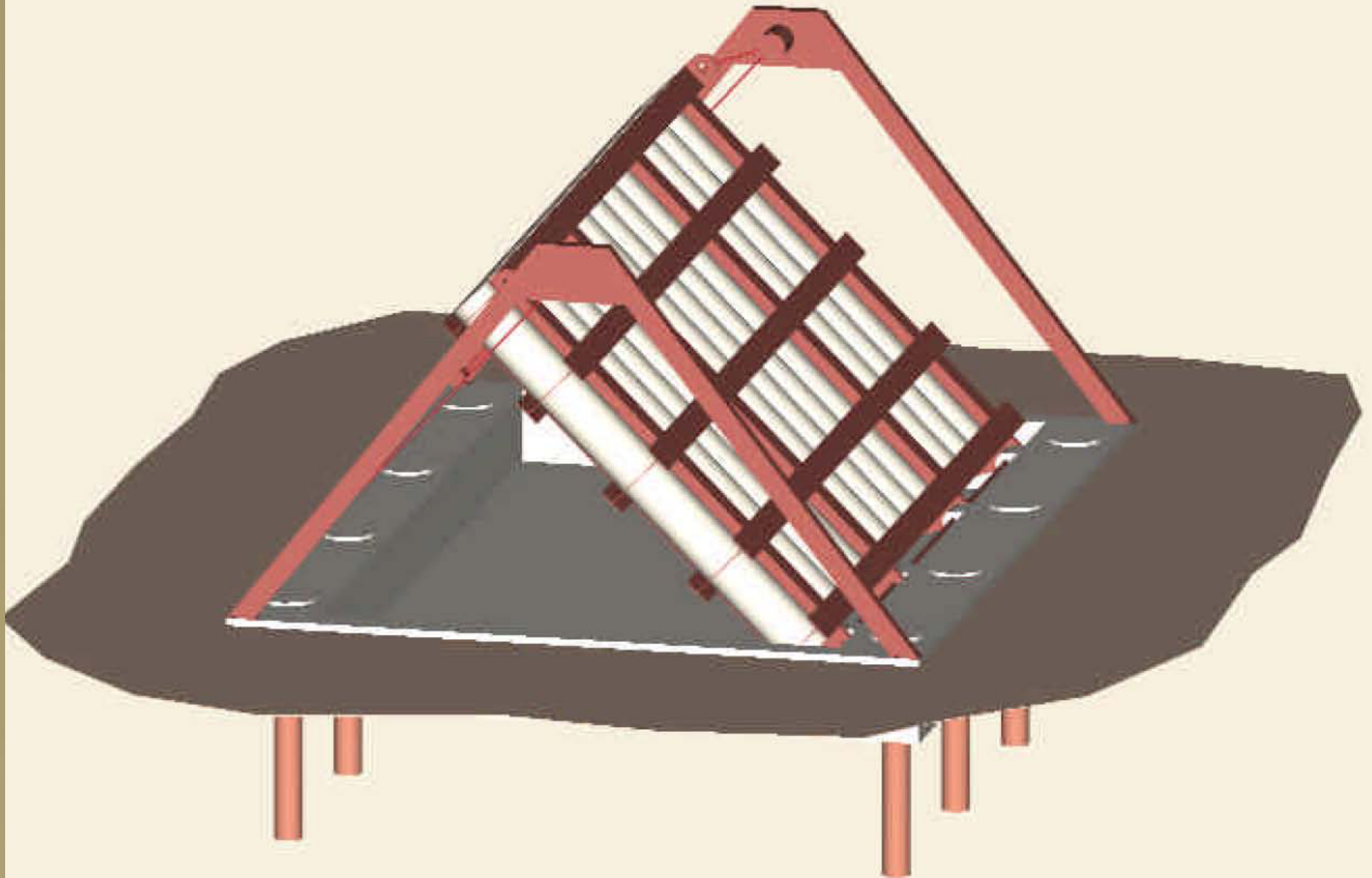
Gate / Barrier Concepts – Flap



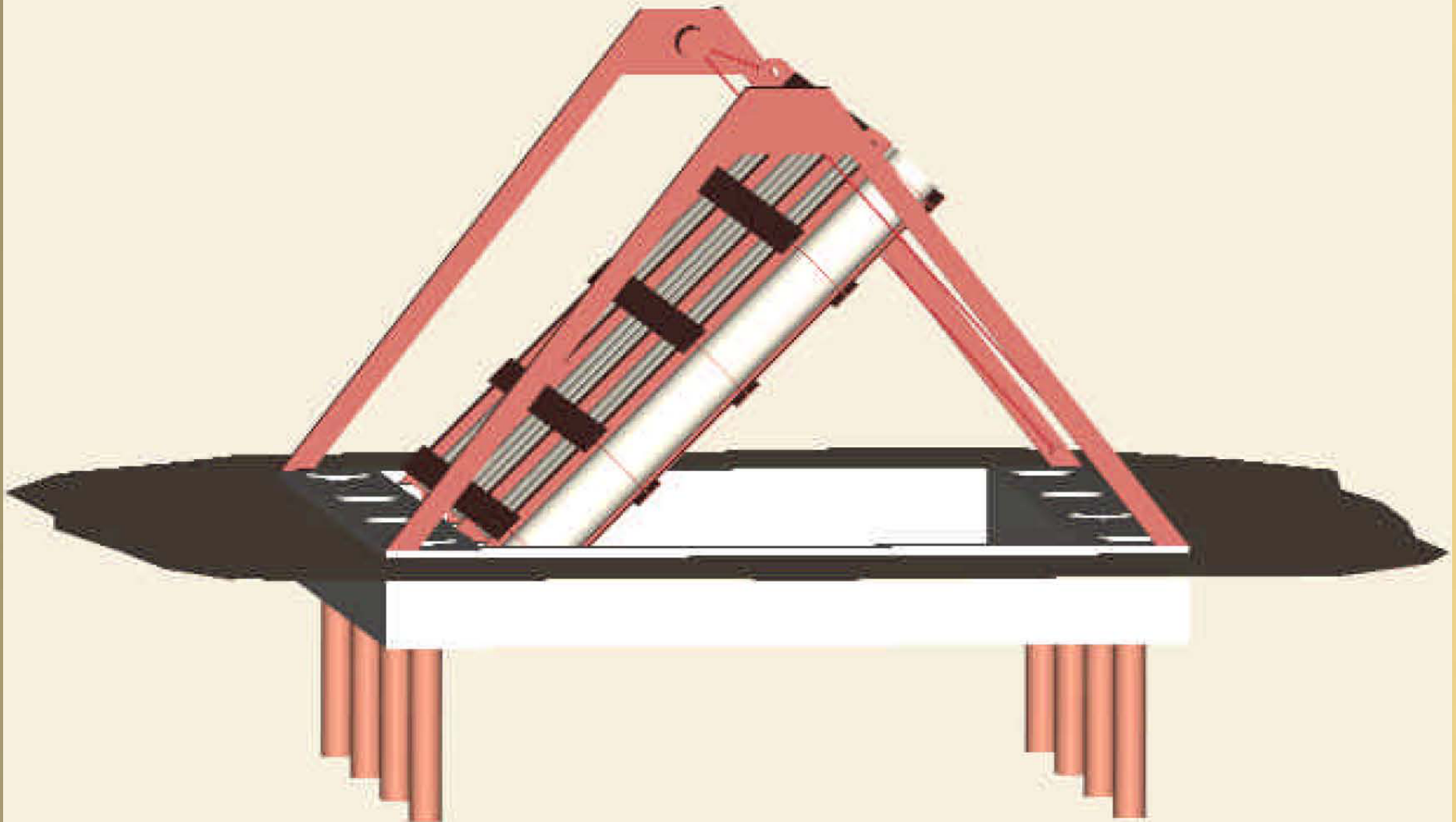
Gate / Barrier Concepts – Flap



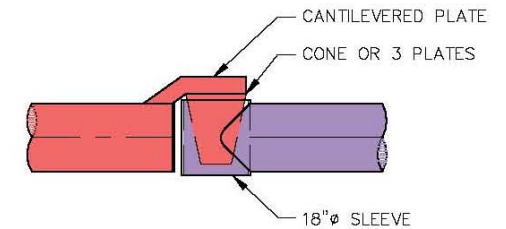
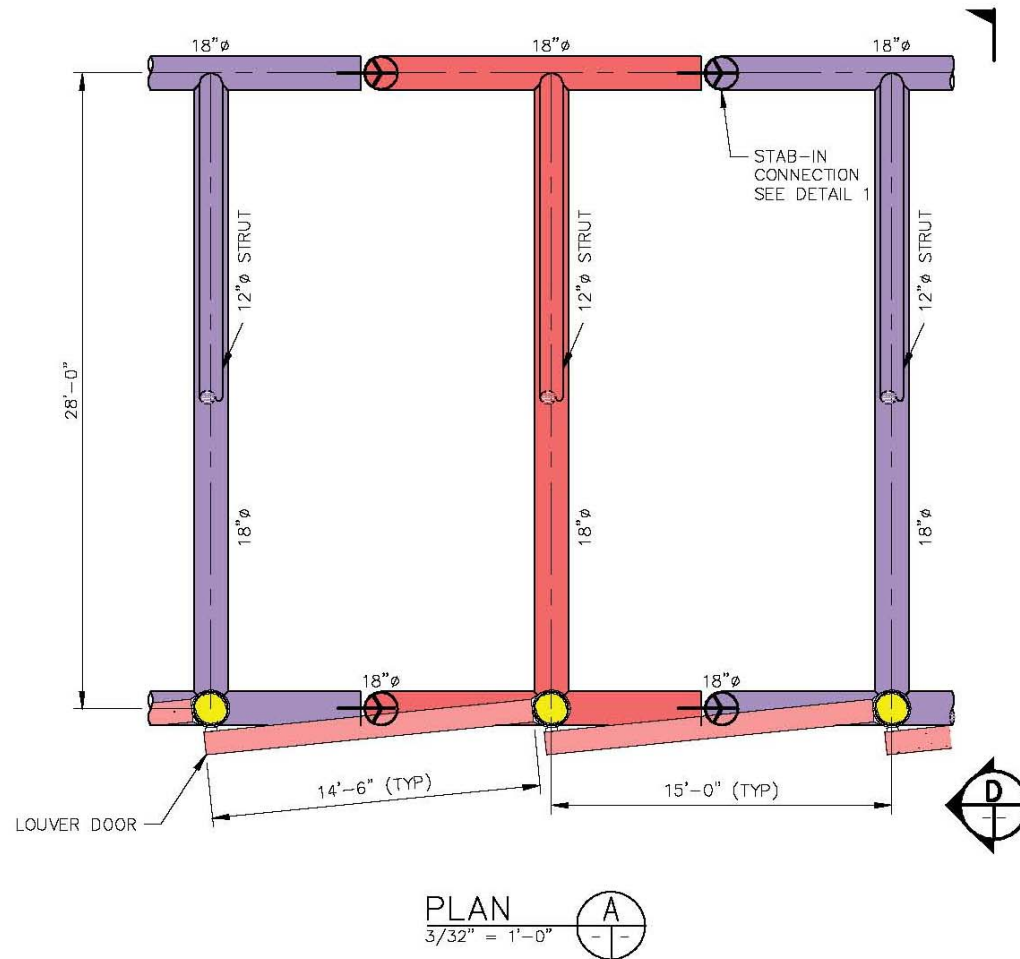
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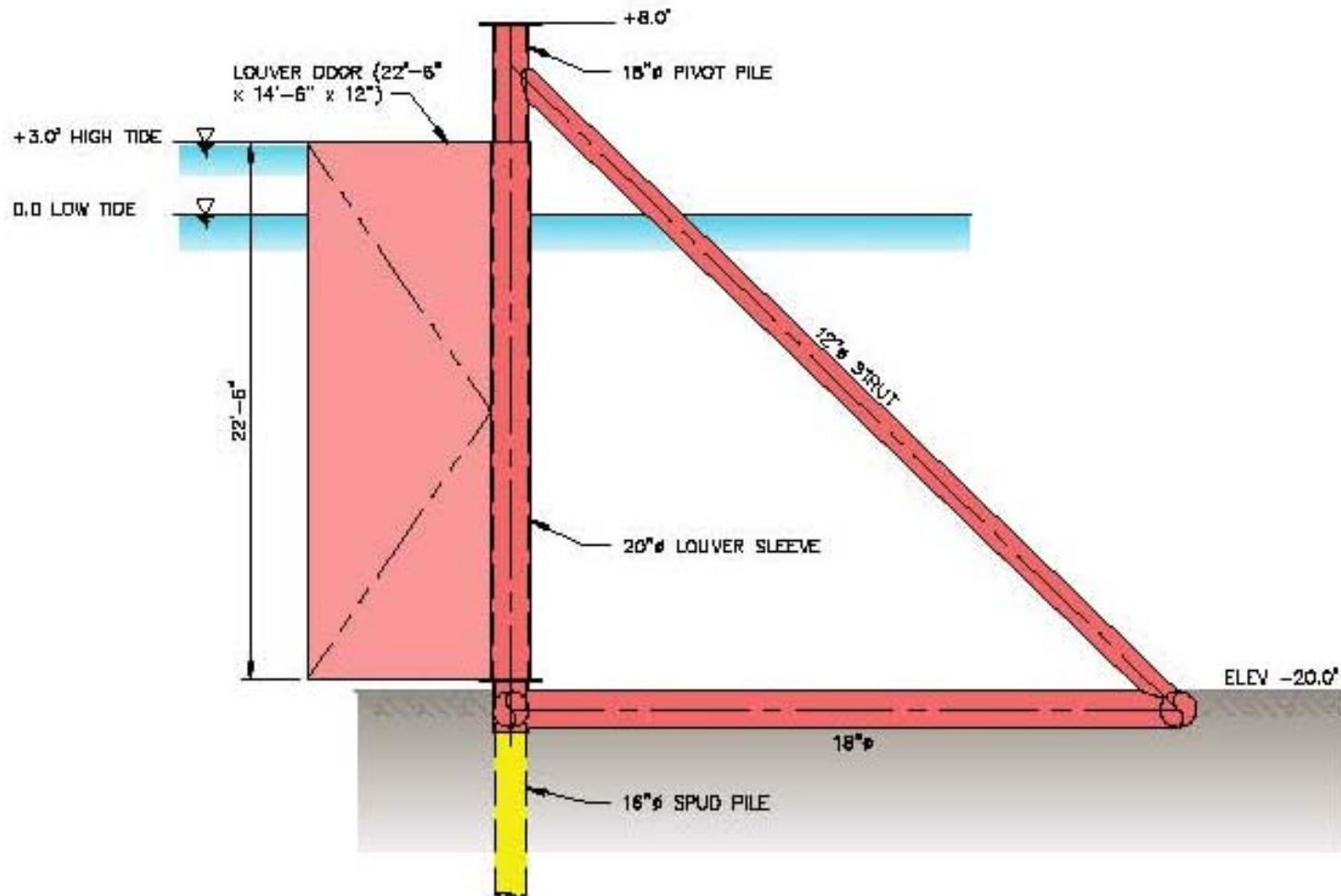


Barrier Only Concepts – Louvered System



DETAIL $\frac{3}{16}'' = 1'-0''$ 

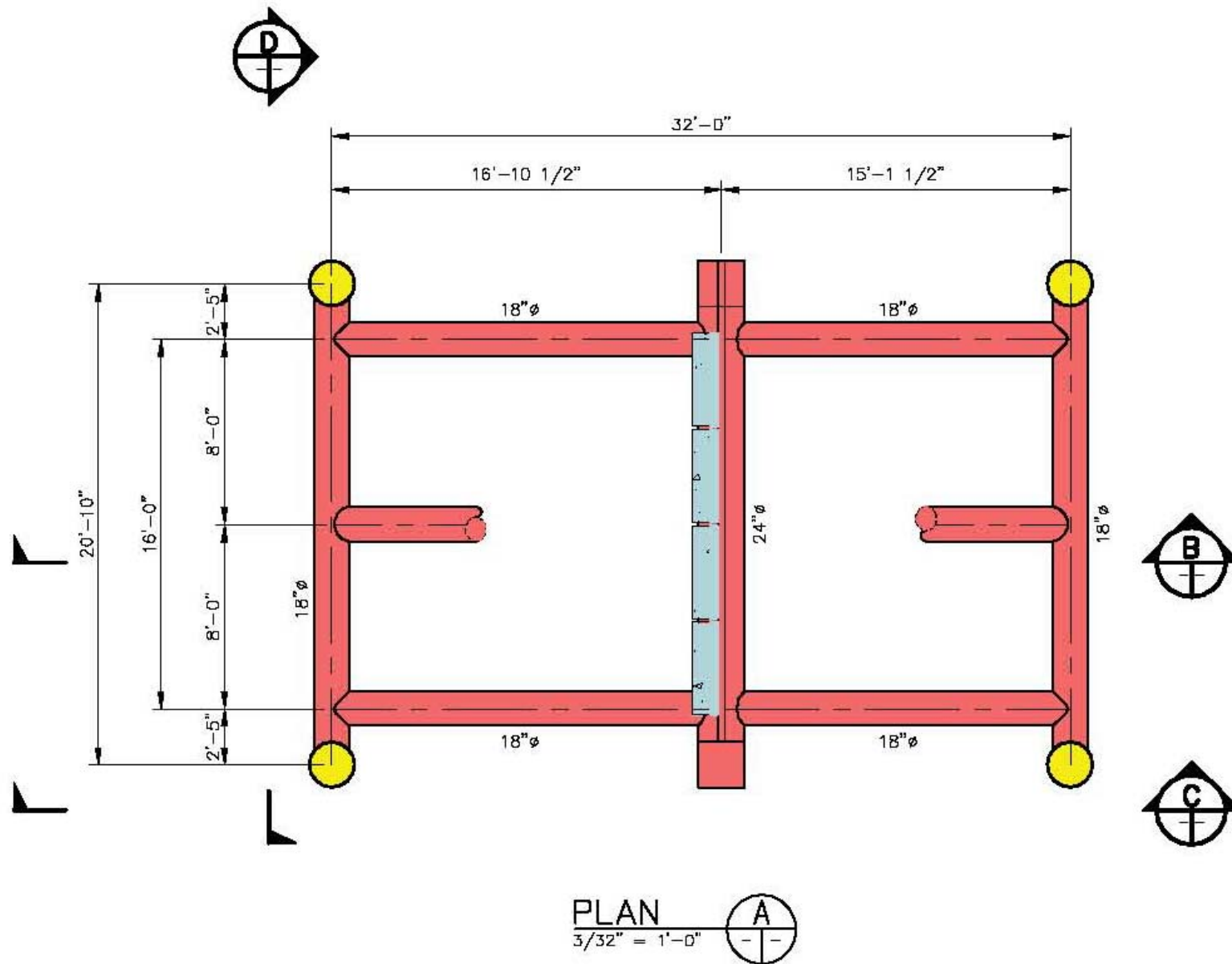
Barrier Only Concepts – Louvered System



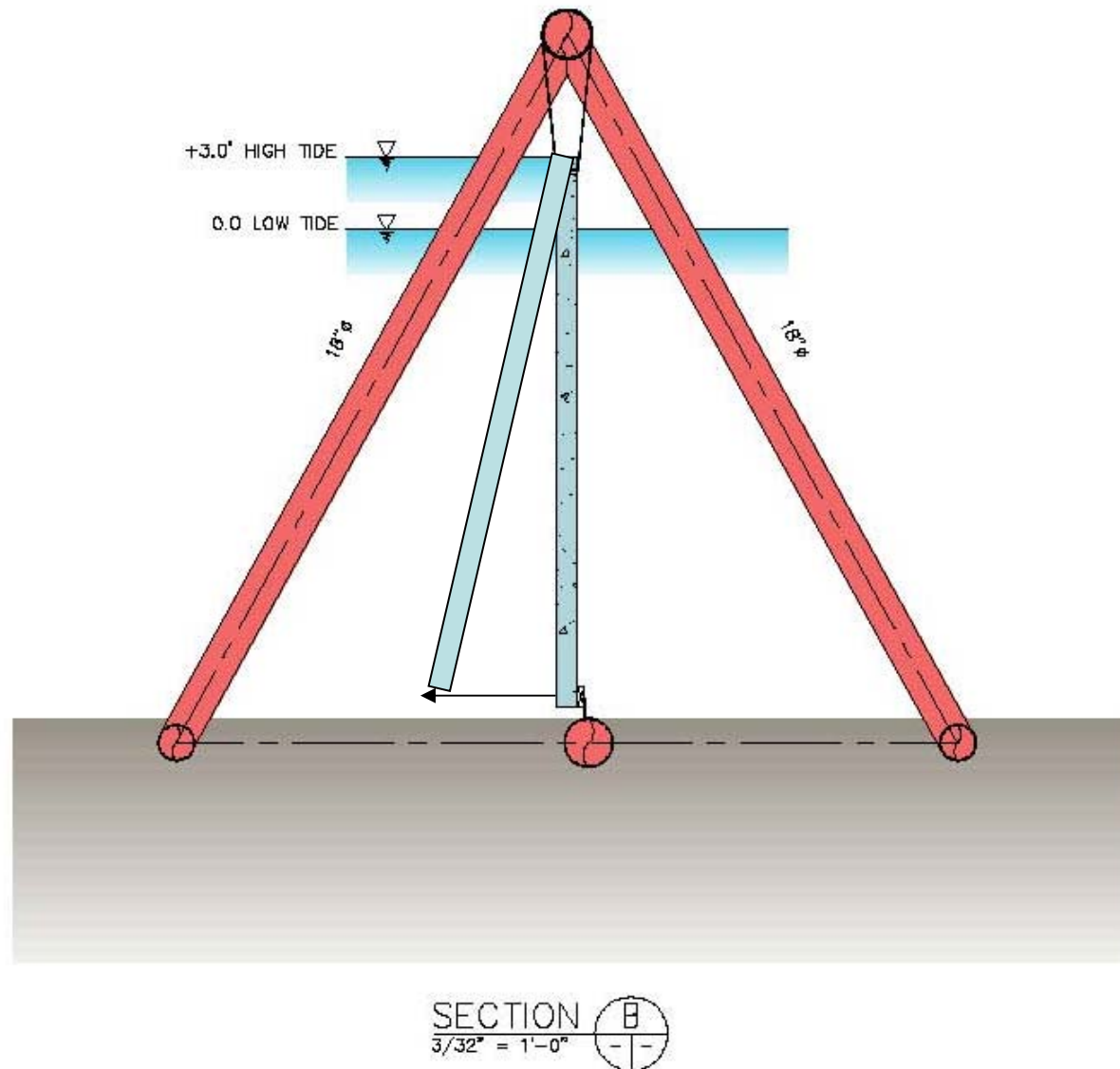
SECTION C
3/32" = 1'-0"



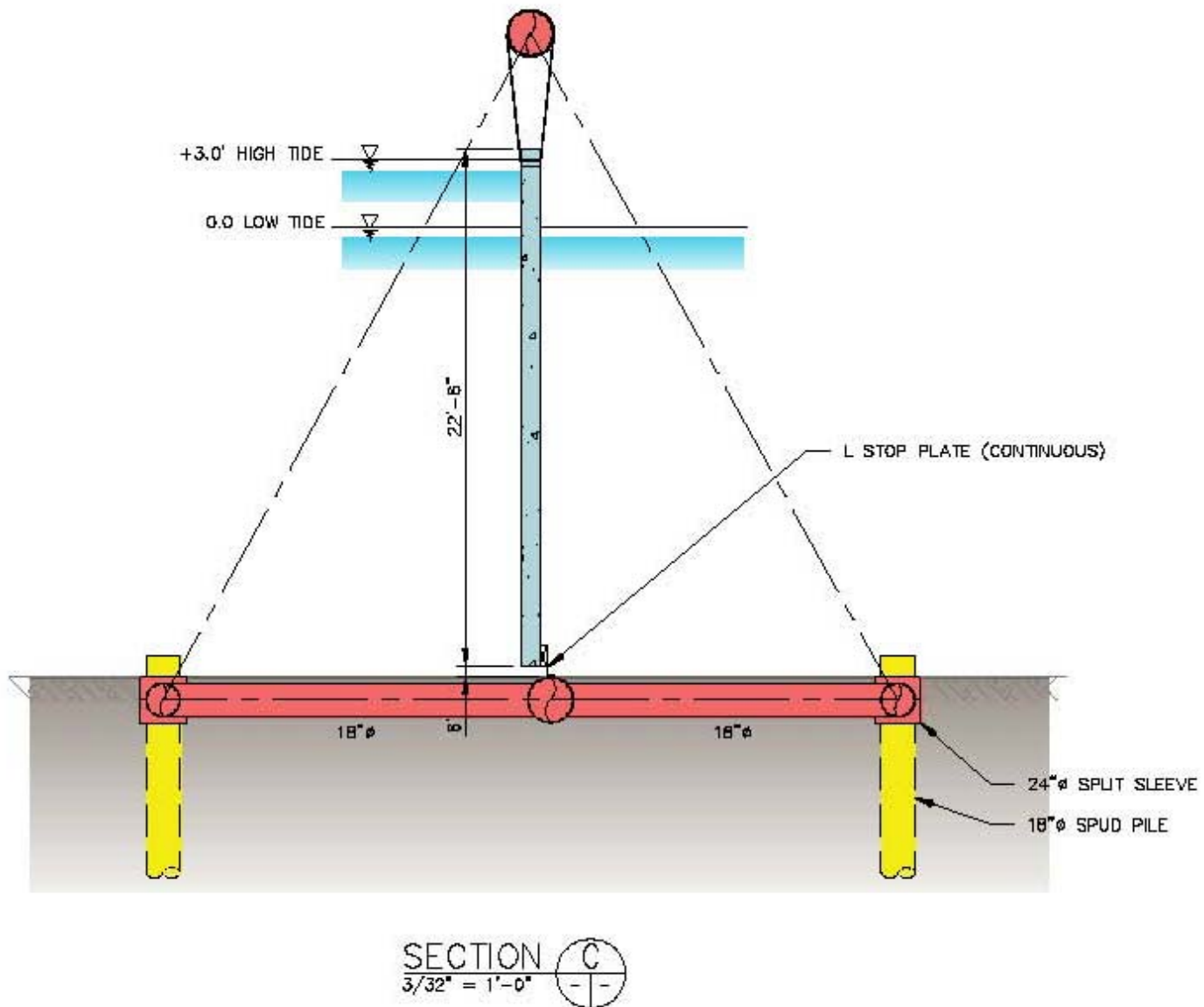
Barrier Only Concepts – Pendant



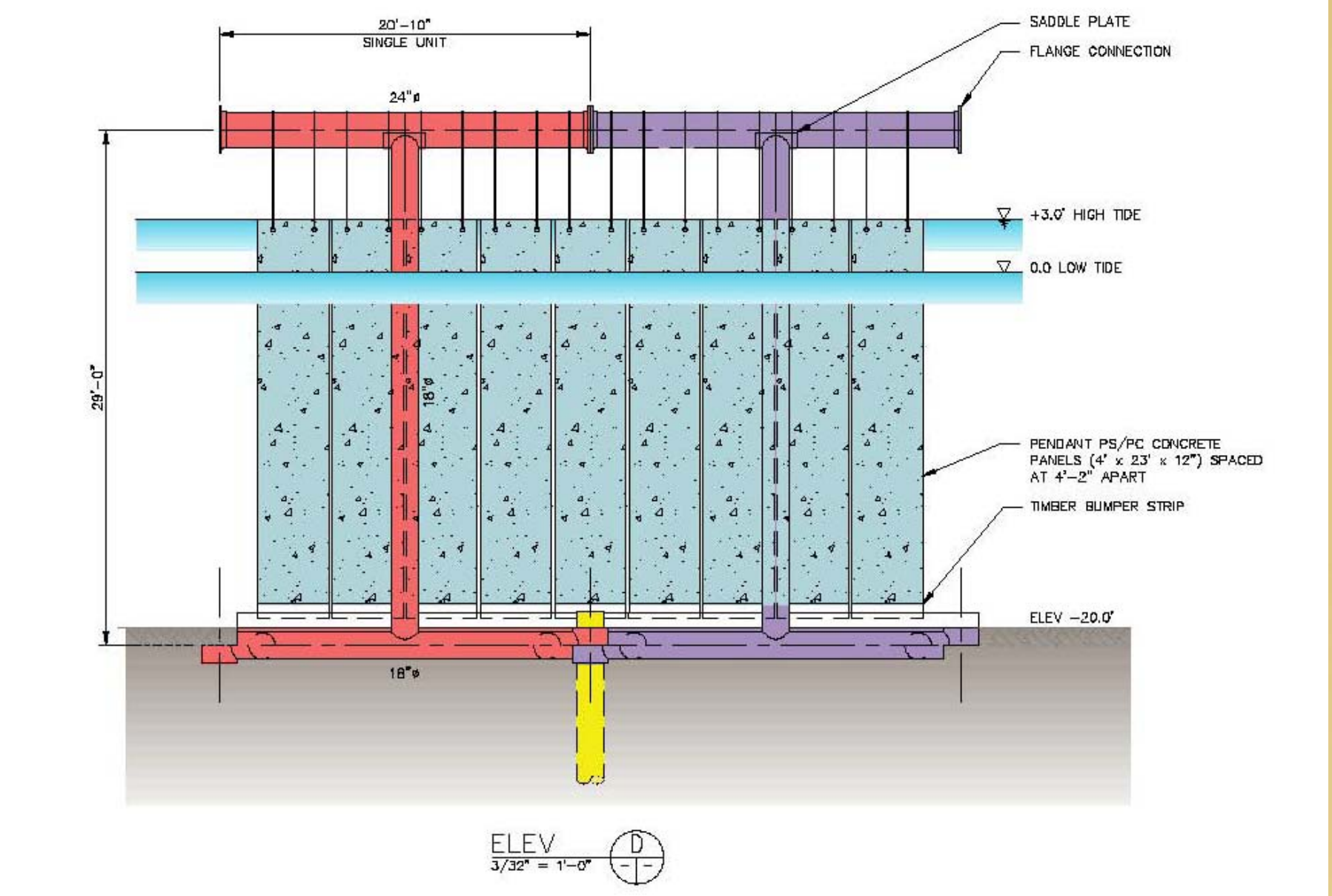
Barrier Only Concepts – Pendant



Barrier Only Concepts – Pendant



Barrier Only Concepts – Pendant



Marginal Closure Area

- Sheetpile
- Rock Fill
- Other ?

Path Forward

- **Confirm Project Objectives**
- Concurrence on Engineering Criteria
- Select Location / Section
- Identify Candidate Concept(s)
 - Gate
 - Barrier
 - Marginal Closure Area
- Indicative Cost (+/- 40%)
- Documentation

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